WHAT IS CLAIMED IS:

1. A ridge-waveguide type semiconductor laser device comprising:

an active region between upper and lower cladding layers;

a stripe-shaped ridge formed in an upper portion of at least said upper cladding layer, said ridge having side surfaces; and

an insulating film functioning as a current constriction layer, said insulating film being formed on said side surfaces of said ridge;

wherein,

on the assumption that an effective refractive index difference n between an effective refractive index n_{eff1} of said ridge for an oscillation wavelength, that an effective refractive index n_{eff2} of a portion on each of both sides of said ridge for the oscillation wavelength is $\Delta n - n_{eff1} - n_{eff2}$, and a ridge width is W;

at least one of a kind and thickness of said insulating film, a thickness of an electrode film on said insulating film, a ridge height, a kind of said upper cladding layer, and a thickness of a remaining layer portion, located on each of both the sides of said ridge, of said upper cladding

layer is set such that a combination of W and Δn is located in a specific Δn-W region on X-Y coordinates on which W (μm) is plotted on the X-axis and Δn is plotted on the Y-axis,

said specific Δn-W region being defined so as to satisfy the following three equations:

$$\Delta n \leq 0.004 \times W + 0.0123, \qquad (1)$$

$$W \geq 1.0\ \mu m, \text{ and} \qquad (2)$$

$$\Delta n \geq 0.0056. \qquad (3)$$

2. A method of fabricating a ridge-waveguide type semiconductor laser device having a structure such that an upper portion of at least an upper cladding layer is formed into a stripe-shaped ridge with side surfaces, and an insulating film functioning as a current constriction layer is formed on said side surfaces of said ridge, said method comprising the steps of:

setting a constant assuming that an effective refractive index difference Δn between an effective refractive index n_{eff1} of said ridge for an oscillation wavelength and an effective refractive index n_{eff2} of a portion on each of both sides of said ridge for the oscillation wavelength is Δn-n_{eff1}-n_{eff2}, and a ridge width is W, and setting, on X-Y coordinates on which W (μm) is plotted on the X-axis and Δn is plotted on the Y-axis,

constants "a", "b", "c", and "d" of the following three equations:

$$\Delta n \leq 0.004 \times W + 0.0123 \quad (1)$$

$$W \geq 1.0\ \mu m \quad (2)$$

$$\Delta n \geq .0056 \quad (3)$$

forming a device with an active region between a lower cladding layer and the upper cladding layer; and

forming said insulating layer on said side surfaces of said ridge,

wherein,

said ridge and insulating layers are formed taking into consideration said constant.

3. A method of fabricating a ridge-waveguide type semiconductor laser device according claim 2, wherein said constants "a" and "b" in said equation (1) are determined by establishing a relationship between Δn and the kind level by experiments;

said constant "d" in said equation (3) is determined by establishing a relationship between Δn and θ_{para} by experiments; and

said constant "c" in said equation (2) is a value limited by an etching step at the time of formation of said ridge.

4. A method of fabricating a ridge-waveguide type semiconductor laser device according to claim 2, further comprising:

a film thickness and the like setting step of setting at least either of a kind and thickness of said insulating film, a thickness of an electrode film on said insulating film, a ridge height, a kind of said upper cladding layer, and a thickness of a remaining layer portion, located on each of both the sides of said ridge, of said upper cladding layer in such a manner that a combination of Δn and W satisfies said three equations (1), (2) and (3).

5. A method of fabricating a ridge-waveguide type semiconductor laser device according to claim 3, further comprising:

a film thickness and the like setting step of setting at least either of a kind and thickness of said insulating film, a thickness of an electrode film on said insulating film, a ridge height, a kind of said upper cladding layer, and a thickness of a remaining layer portion, located on

each of both the sides of said ridge of said upper cladding layer in such a manner that a combination of Δn and W satisfies said three equations (1), (2) and (3).

6. A method of fabricating a ridge-waveguide type semiconductor laser device according to claim 4, wherein when said semiconductor laser device is a GaN based semiconductor laser device, in said film thickness and the like setting step, at least either of a kind and thickness of said insulating film, a thickness of an electrode film on said insulating film, a ridge height, a kind of said upper cladding layer, a thickness of a remaining layer portion, located on each of both the sides of said ridge, of said upper cladding layer, an Al composition ratio and a thickness of an AlGaN cladding layer, a thickness of a GaN optical guide layer, a thickness and an In composition ratio of a well layer of a GaInN·multi-quantum well active layer, is set in such a manner that a combination of W and Δn satisfies said three equations (1), (2) and (3).

7. A method of fabricating a ridge-waveguide type semiconductor laser device according to claim 5, wherein when said semiconductor laser device is a GaN based semiconductor laser device, in said film thickness and the like setting step, at least either of a kind and thickness

of said insulating film, a thickness of an electrode film on said insulating film, a ridge height, a kind of said upper cladding layer, a thickness of a remaining layer portion, located on each of both the sides of said ridge, of said upper cladding layer, an Al composition ratio and a thickness of an AlGaN cladding layer, a thickness of a GaN optical guide layer, a thickness and an In composition ratio of a well layer of a GaInN·multi-quantum well active layer, is set in such a manner that a combination of W and Δn satisfies said three equations (1), (2) and (3).